Differences in the Risk of Homicide and Other Fatal Injuries between Postpartum Women and Other Women of Childbearing Age: Implications for Prevention

Patricia M. Dietz, DrPH, MPH, Roger W. Rochat, MD, Betsy L. Thompson, MD, MSPH, Cynthia J. Berg, MD, MPH, and Gary W. Griffin, MS

ABSTRACT

Objectives. This study compared injury deaths between postpartum women and other women aged 15 to 44.

Methods. Risk ratios and 95% confidence intervals (CIs) were computed for injury fatality rates.

Results. Fifty percent (29/58) of postpartum injury deaths were homicides, compared with 26% (427/1648) of injury deaths among nonpregnant, nonpostpartum women. For females aged 15 to 19, the homicide rate was 2.6 times higher (95% CI = 1.17, 5.95) for postpartum females than for other females. The motor-vehicle fatality rate was lower for postpartum females than for nonpregnant, nonpostpartum females (risk ratio = 0.30, CI = 0.18, 0.48).

Conclusions. Postpartum females aged 15 to 19 years were at higher risk of homicide. Postpartum women were at reduced risk of motor-vehicle fatalities. (*Am J Public Health.* 1998;88:641–643)

Introduction

Each year in the United States, approximately 18 000 women aged 15 to 44 years die from injuries.[1] Although injuries are the leading cause of death among women 15 to 34 years of age, injury deaths are usually excluded from maternal mortality studies, which tend to focus exclusively on deaths caused by pregnancy. As a result, few studies have explored the epidemiology of injury deaths in this population.

One previous study of injury deaths among pregnant and postpartum women in Cook County, Illinois, indicated that more women died from injuries (46% of 95 deaths) than from pregnancy-related causes (32%).[2] In a similar study conducted in New York City, injuries caused 39% of the deaths among pregnant and postpartum women.[3] In both of these studies, more than 50% of the injury deaths resulted from homicide.

The purpose of this study was to assess whether postpartum women were at equal risk for injury death as were other women of reproductive age in a state population and to explore factors, such as seat belt use, that have implications for prevention.

Methods

Injury deaths for women were categorized into 3 groups based on the following International Classification of Diseases, 9th edition (ICD-9) codes listed on the death certificate: homicide (E960-E969), motor-vehicle–related (E810-E825), and other (including suicide, E800-E809, E826-E959, E970-E999).[4] We identified injury deaths of Georgia residents up to 1 year postpartum by linking 1990/92 death certificate files of females who died at ages 15 to 44 to birth certificate files of 1989 to 1992.[5] A probabilistic method was used to calculate the likelihood of a correct linkage based on use of the mother's first and maiden names and date of birth.[6] All linked death and birth records were manually reviewed. The population of postpartum women at risk of injury fatalities included women 15 to 44 years of age who had a live birth in 1990, 1991, or 1992.

To determine the number of injury deaths among nonpregnant, nonpostpartum women ages 15 to 44 between 1990 and 1992, we subtracted the number of women who died from injuries while pregnant or within 1 year after a live birth from the number of Georgia female residents ages 15 to 44 who died from injuries. The population of nonpregnant, nonpostpartum women at risk of injury fatalities was defined as all female Georgia residents ages 15 to 44, who did not have a live birth, induced abortion, or a fetal death from 1991 to 1992. We subtracted the number of females aged 15 to 44 years who had a live birth, induced abortion or fetal death in 1990, 1991, or 1992 from the 1990 to 1992 Georgia census population estimate of females aged 15 to 44 years.

We calculated risk ratios (RR) and 95% confidence intervals (95% CI) of injury fatality for postpartum women compared to nonpregnant, nonpostpartum women stratified by age, race, and urban/rural residence.[7] We used death, birth, and fetal death certificates to obtain demographic characteristics and county of residence. Urban counties were defined as counties in a metropolitan statistical area

Patricia M. Dietz is with the Epidemic Intelligence Service, Roger W. Rochat and Cynthia J. Berg are with the Division of Reproductive Health, and Betsy L. Thompson is with the Division of Field Epidemiology, all at the Centers for Disease Control and Prevention, Atlanta, Ga. Gary W. Griffin is with the Office of Perinatal Epidemiology, Georgia Department of Human Resources, Atlanta.

Requests for reprints should be sent to Patricia M. Dietz, DrPH, MPH, Centers for Disease Control and Prevention, MS K-35, 4770 Buford Hwy, NE, Atlanta, GA 30341-3714.

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with a population of at least 250 000. The Georgia Department of Public Safety provided information on alcohol and drug use and seat belt use for the postpartum women who died from motor-vehicle–related causes. For postpartum women who died from homicide, the Federal Bureau of Investigation provided information on the alleged assailant.

Results

We identified 165 deaths among postpartum women, 58 (35.1%) of which were caused by injuries. Of the 58 injury-related deaths, 50.0% (29) were caused by homicide, 29.3% (17) were caused by motor-vehicle–related injuries, and 20.7% (12) were caused by other injuries. Of the 1648 injury deaths to nonpregnant, nonpostpartum women, 26.1% were caused by homicide, 47.3% were caused by motor-vehicle–related injuries, and 26.6% were caused by other injuries. The risk of an injury fatality was approximately 50% less for postpartum women than for nonpregnant, nonpostpartum women (RR = 0.48, 95% CI = 0.37, 0.62).

Overall, postpartum women had the same risk of death by homicide as nonpregnant, nonpostpartum women (Table 1). However, the risk of death by homicide was modified by age (Breslow-Day test for homogeneity, $P = .008$). Postpartum women 15 to 19 years of age had a risk of death by homicide that was 2.63 times the risk of nonpregnant, nonpostpartum women in the same age group (95% CI = 1.17, 5.95). The postpartum women had the same risk of death by homicide as nonpregnant, nonpostpartum women when stratified separately by race and by urban/rural residence. Of the 29 postpartum women who died by homicide, 11 (38%) were killed by a boyfriend, husband, or ex-husband, 8 (28%) were killed by an acquaintance, 4 were killed by a stranger, and 2 were killed by their father. In 4 cases, the identity of the killer was unknown.

During 1990 to 1992, postpartum women had one third the risk of a motor-vehicle–related fatality of nonpregnant, nonpostpartum women (Table 2). The risk remained significantly lower among postpartum women than among nonpregnant, nonpostpartum women when stratified separately by age, race, and urban/rural residence. The majority of postpartum women killed in a car crash were not wearing a seat belt (12/16; 75%). None of the women who were drivers (n = 8) were reported to be under the influence of alcohol or other drugs.

TABLE 1—Risk Ratios and 95% Confidence Intervals for Homicides among Postpartum Women vs Nonpregnant, Nonpostpartum Women: Georgia, 1990 through 1992

	Postpartum Homicides, No.	Nonpregnant, Nonpostpartum Homicides, No.	Risk Ratio	95% Confidence Interval
Overall	29	430	0.92	0.63, 1.33
Age, y				
15–19	7	33	2.63	1.17, 5.95
20–24	10	87	0.76	0.39, 1.46
25–29	10	87	0.95	0.49, 1.82
30–44	2	223	0.25	0.06, 1.02
Race[a]				
Black	20	284	0.78	0.50, 1.23
White	9	139	0.96	0.49, 1.88
Residence				
Urban	22	300	0.99	0.64, 1.52
Rural	7	130	0.75	0.35, 1.60

[a]7 deaths among nonpregnant, nonpostpartum women of other races were excluded.

TABLE 2—Risk Ratios and 95% Confidence Intervals for Motor-Vehicle–Related (MVR) Fatalities among Postpartum Women vs Nonpregnant, Nonpostpartum Women: Georgia, 1990 through 1992

	Postpartum MVR Deaths, No.	Nonpregnant, Nonpostpartum MVR Deaths, No.	Risk Ratio	95% Confidence Interval
Overall	17	779	0.30	0.18, 0.48
Age, y				
15–19	5	167	0.37	0.15, 0.90
20–24	8	142	0.37	0.18, 0.76
25–29	2	123	0.13	0.03, 0.54
30–44	2	347	0.16	0.04, 0.65
Race[a]				
Black	2	178	0.13	0.03, 0.50
White	15	590	0.38	0.23, 0.63
Residence				
Urban	8	451	0.27	0.14, 0.52
Rural	9	328	0.34	0.17, 0.68

[a]11 MVR deaths among nonpregnant, nonpostpartum women of other races were excluded.

Discussion

Consistent with 2 maternal mortality studies conducted in urban areas, homicide was the leading cause of injury death among postpartum women in Georgia.[2,3] We found that the homicide rate in the 15- to 19-year age group was higher among postpartum women than among nonpregnant, nonpostpartum female teenagers. The reason for this elevated risk among teenage mothers is unknown. It may be associated with increased family and financial stress related to parenting, or it may be related to social or other factors.

The risk of a motor-vehicle–related fatality was lower for postpartum women than for nonpregnant, nonpostpartum women. This may have resulted from postpartum women spending less time in a car, driving more safely with children in the car, refraining from using alcohol or other drugs, and/or wearing a seat belt more often. None of the postpartum women who died in a car crash were found to have been using alcohol or other drugs, but seat belt use among postpartum women who died (12%) was similar to that among all Georgia residents who died from motor-vehicle–related causes (12%).

By using record linkage to identify injury deaths among postpartum women, we identified more postpartum deaths than we would have with other methods such as review of death certificates or autopsy

reports.[2–4] Some injury deaths among pregnant women were likely to have been included in the nonpregnant, nonpostpartum group. However, the effect on the fatality rate was probably minimal as a result of the relatively small number of these deaths.

Injury deaths constituted a large proportion of preventable deaths among postpartum women in Georgia. Because the majority of postpartum women have received prenatal and postnatal care, health care providers have a unique opportunity to help prevent injury deaths among their patients. We found that a large proportion of the postpartum homicide victims were killed by a boyfriend, husband, or ex-husband. Thus, one approach for prevention is to conduct physical abuse screening among prenatal and postpartum patients and, when needed, to offer referrals to services such as housing, counseling, child care, and legal assistance. Additional strategies that effectively reach postpartum women, especially teenagers, need to be developed and evaluated. Encouraging seat belt use among these patients may help reduce motor-vehicle–related deaths. □

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Facilitating Condom Use with Clients during Commercial Sex in Nevada's Legal Brothels

Alexa E. Albert, BA, David Lee Warner, MPH, and Robert A. Hatcher, MD, MPH

ABSTRACT

Objectives. This study examined condom use in legal Nevada brothels.

Methods. Forty female prostitutes in two brothels were interviewed about client resistance to condoms and techniques for facilitating condom use.

Results. Of 3290 clients in the previous month, 2.7% (95% confidence interval [CI] = 2.2%,3.4%) were reluctant to use condoms. Of these individuals, 72% ultimately used condoms, while 12% chose nonpenetrative sex without condoms. The remaining 16% left the brothels without services. Condom use rates were markedly lower with nonpaying sex partners (lovers) than with clients.

Conclusions. Brothel prostitutes may be at greater risk for acquiring HIV and other sexually transmitted diseases from lovers than from clients. (*Am J Public Health.* 1998;88:643–646)

Introduction

Although latex condoms can substantially reduce the risk of transmission of human immunodeficiency virus (HIV) and other sexually transmitted diseases (STDs),[1–4] men frequently fail to use condoms during intercourse and thus place their female partners, as well as themselves, at risk for infection.[5,6]

Although most HIV prevention programs focus on women's responsibility to ensure that condoms are used,[7] gender inequity often prevents women from protecting themselves in sexual encounters.[8,9] Women have traditionally lacked power over sexual decision making—including whether a condom is used—largely as a result of perceived threats to physical, social, and/or economic survival. Thus, women must be able to rely on their sexual negotiation skills to introduce and sustain condom use with their male partners.

It has been hypothesized that sex workers (prostitutes) are more likely to be in control of sexual decision making than other women (i.e., in terms of deciding what type of sex they are willing to have and whether condoms will be used).[9,10] However, it is only in Nevada's legal brothels that sex workers' insistence on condom use is upheld by law. In March 1988, in an effort to prevent the transmission of HIV, the Nevada legislature enacted a mandatory condom law requiring condoms during all brothel sexual activity. Although Nevada's mandatory condom law is made known to prospective clients before sexual activity begins, with a public health notice posted outside on entrance gates and inside over the bar, brothel workers previously have reported that some clients are still reluctant to use condoms (personal communication by brothel workers to A. Albert, 1993).

The authors are with the Family Planning Program, Emory University School of Medicine, Atlanta, Ga. Alexa E. Albert is also with Harvard Medical School, Boston, Mass.

Requests for reprints should be sent to Alexa E. Albert, c/o Robert A. Hatcher, Family Planning Program, Emory University School of Medicine, 69 Butler St SE, Atlanta, GA 30303.

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